NAME: DATE:

p1020: graded take-home open-note practice exam (version 213)

Question 1

Let f represent a function. If $f[4] = 26$, then there exists a knowable solution to the equation below.

$$y = \frac{f\left[\frac{x}{2} - 10\right] - 5}{3}$$

Find the solution.

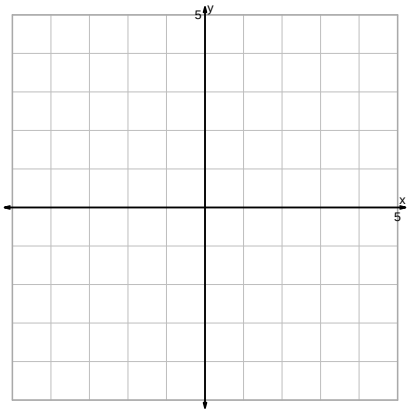
$x =$

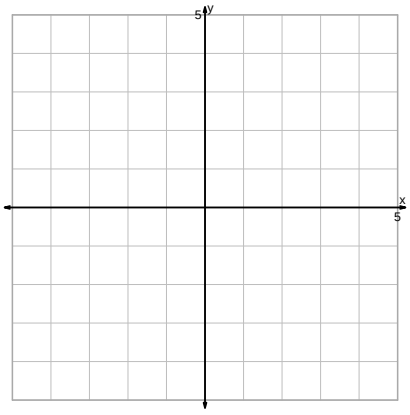
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

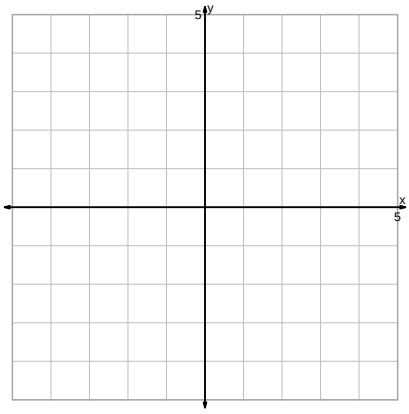
$y = \frac{x^3}{2}$

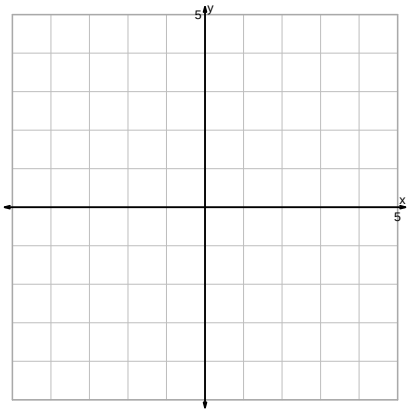




$y = 2 \cdot 2^x$

$y = 2^{-x}$

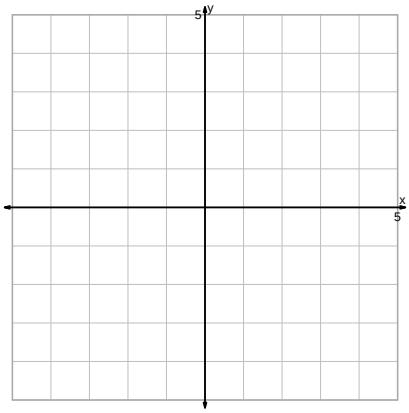


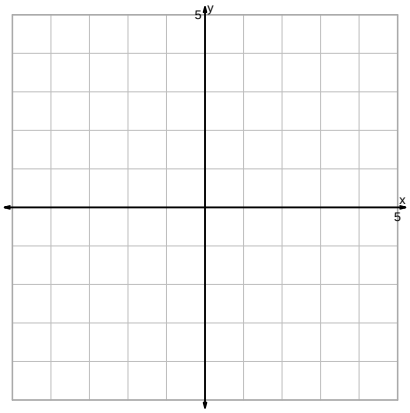


$y = (2x)^2$

Question 2 continued...

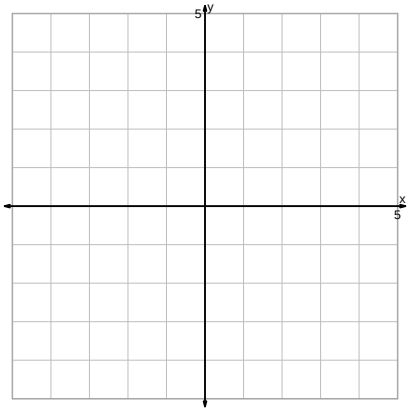
$y = x^3 + 2$

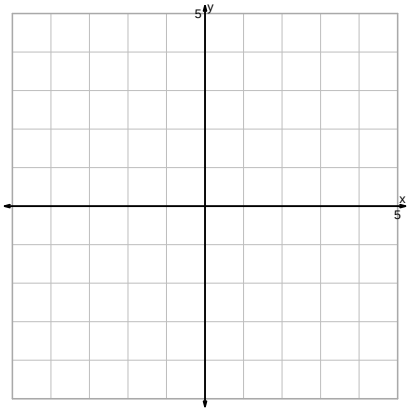




$y = x^2 - 2$

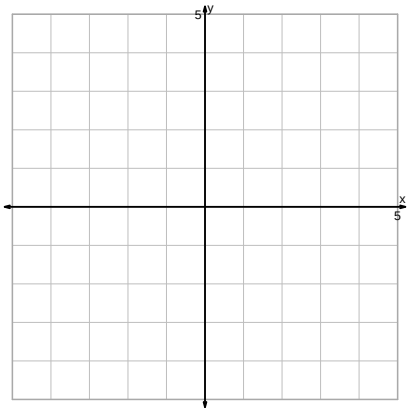
$y = \sqrt[3]{x-2}$

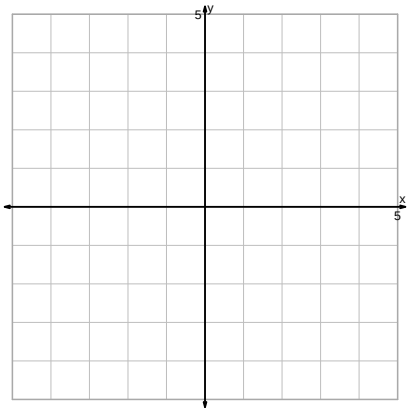




$y = \sqrt{\frac{x}{2}}$

$y = -\log_2(x)$

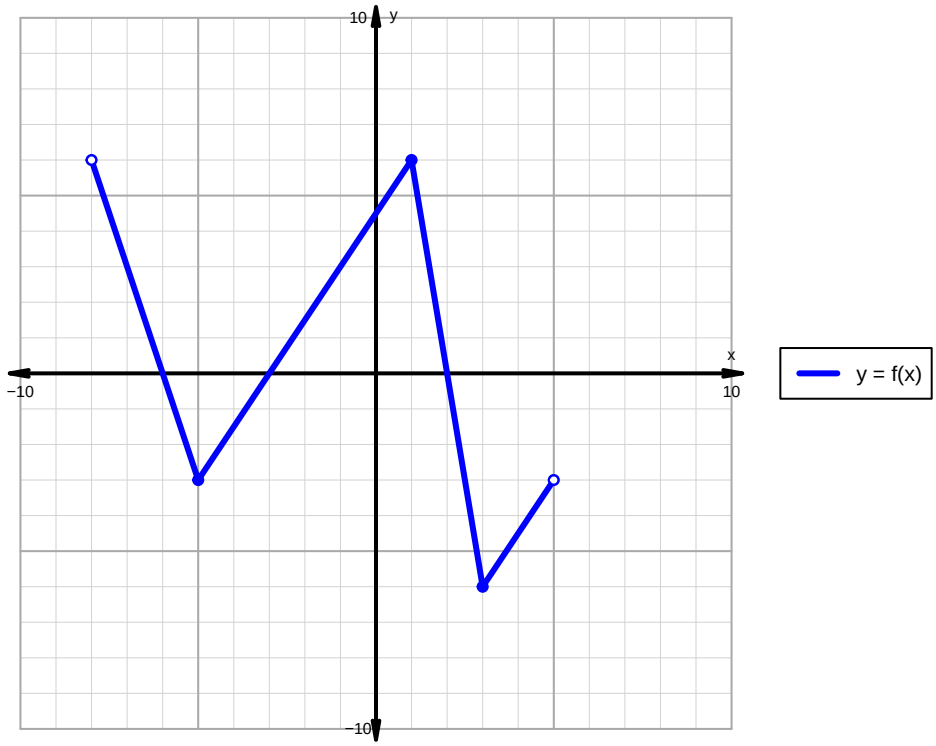




$y = \log_2(x+2)$

Question 3

A function is graphed below.



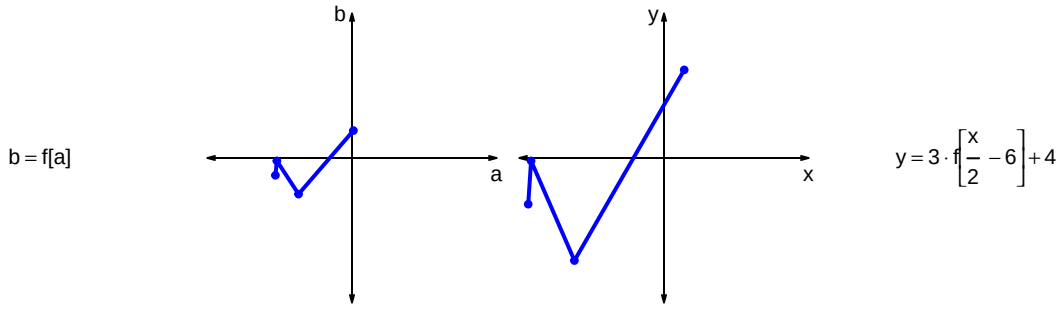
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 3 \cdot f\left[\frac{x}{2} - 6\right] + 4$ are represented below in a table and on graphs.

a	b	x	y
-53	-12	-94	-32
-52	-2	-92	-2
-37	-25	-62	-71
1	19	14	61



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 3 \cdot f\left[\frac{x}{2} - 6\right] + 4$?

Question 5

A parent square-root function is transformed in the following ways:

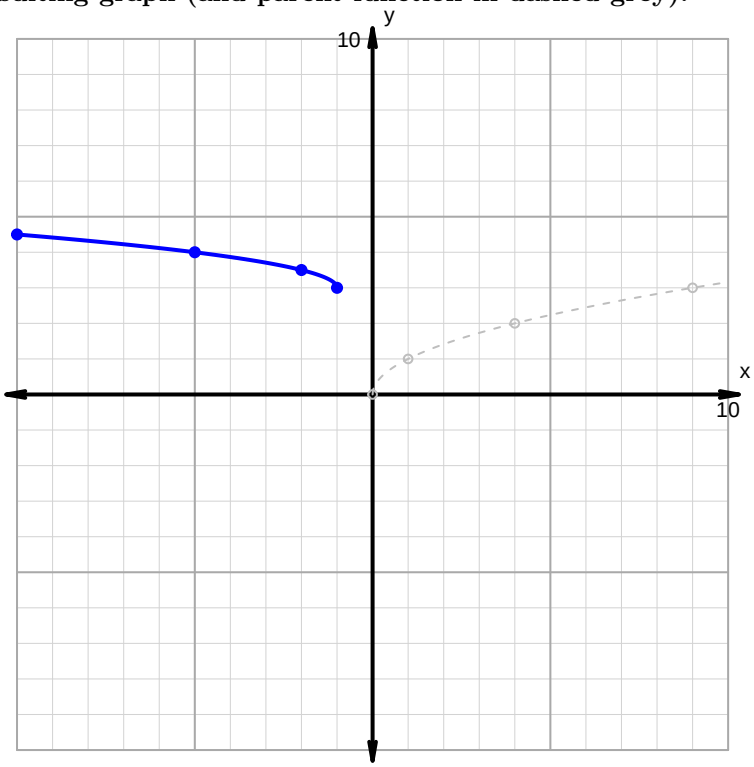
Horizontal transformations

1. Translate right by distance 1.
2. Horizontal reflection over y axis.

Vertical transformations

1. Vertical shrink by factor 2.
2. Translate up by distance 3.

Resulting graph (and parent function in dashed grey):

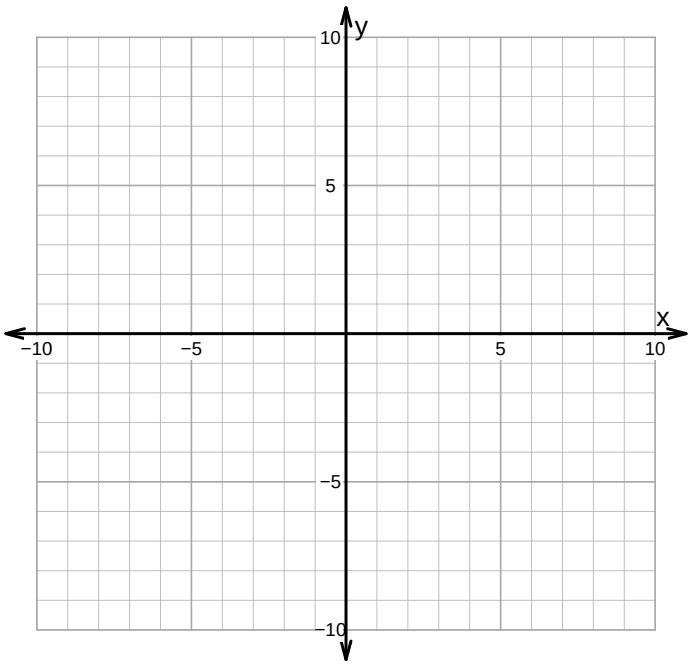


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y \;=\; -3 \cdot |x - 3| + 3$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	